

## REMARKS

Claims 15-26 (as renumbered) were examined in the Office Action. Claim 22 has been amended; new claims 49-56 have been added. Claims 15-56 are therefore presented for reconsideration. Claims 15, 22 and 49 are the only independent claims.

### THE AMENDMENTS

The amendment to claim 22 merely deletes a redundant phrase that was inadvertently included when the claim was drafted. This amendment does not alter the scope of the claim.

New independent claim 49 is similar to claim 15, but includes the additional feature of a melt bore that extends through the tip insert and communicates with the melt bore in the inner portion of the nozzle. New dependent claims 50-56 recite additional features, some already recited in other claims and others newly recited. The new claims are fully supported by the original disclosure (see, e.g., page 9, lines 1-13 of the specification).

### THE REJECTION

Claims 15-26 stand rejected under 35 U.S.C. §103(a) as unpatentable over Mak (US 5,704,113) in view of Gellert (US 4,865,535). The rejection is respectfully traversed for at least the following reasons.

In Applicant's injection molding apparatus of independent claim 15, the inner portion of a heated nozzle has "a melt bore (18) extending therethrough, and a tip insert (44) metalurgically bonded to the front end (16) of the inner portion (12)." In Mak's injection molding apparatus the inner portion 12 of the nozzle has a melt bore 18 but, as the Examiner concedes, "Mak fails to disclose a tip insert bonded to the inner portion." Instead, the front end of Mak's inner portion has a removable nozzle seal 24 having "a hollow inner piece 26 and a threaded outer piece 28 screwed into a threaded seat 30" at the front end. Mak, col. 2, lines 31-33.

The Examiner thus turns to Gellert, who discloses a heated nozzle having certain brazed-on elements. According to the Examiner, "Gellert discloses the bonding process of the tip to the inner portion...", which allegedly suggests that a bonding process could be used to secure the parts of Mak's nozzle. However, close study of Gellert reveals a structure that is very different from Mak's.

In Mak melt passes out of the nozzle through the "hollow inner piece 26," which has a melt bore therethrough, and that piece is designed to be readily removable by virtue of the threaded connection between elements 28 and 30. While Mak says that the front end "can have various configurations for different types of gating" (column 2, line 30), there is no suggestion in Mak that anything other than a mechanical (threaded) coupling should be used at the front end.

In contrast, the front end of Gellert's nozzle is closed by a blind, tapered "nose portion 26" (see Fig. 1; also see item 138 in Fig. 5) through which the heating element runs; the melt bore 72 in the nozzle inner portion 18 exits the inner portion through a diagonal bore 74 just behind the nose portion 26 ("tip portion 138": see column 5, line 63 through column 6, line 11). As melt never passes through Gellert's heated tip portion and the internal heater element is integral with the tip, a more permanent assembly method, such as brazing, would seem ideal for joining these pieces because disassembly would be unnecessary.

For Mak, however, the considerations are quite different. A nozzle seal that conducts melt internally may have to be interchanged with another or removed for cleaning. Thus one of ordinary skill in the art would not have regarded Gellert's brazed assembly as pertinent to Mak's removable nozzle seal arrangement, and would not have thought to modify Mak's construction as the Examiner suggests.

Independent claims 22 and 49 include all of the limitations of claim 15 and are therefore patentable for the reasons stated above. Accordingly, all of the claims are patentable for the above reasons. Further, claim 56 recites that the tip insert has a tapered front end, and that at least a portion of the melt bore in the tip insert extends diagonally outwardly to the outer tapered surface of the front end of the tip insert. Such an arrangement is not found in Mak or Gellert.

CONCLUSION

For the foregoing reasons, it is respectfully submitted that all of the claims are patentable over the applied references. The rejection should therefore be withdrawn, and all of the claims allowed. Favorable action is earnestly solicited.

Respectfully submitted,

February 20, 2001  
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